

APPLICATION FOR LETTERS PATENT  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Title: INTERNET BASED PRINT ORDER SYSTEM

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## INTERNET BASED PRINT ORDER SYSTEM

### FIELD OF THE INVENTION:

The present invention relates to the expedited production of print media. More particularly, the invention relates to an internet based print order system specifically adapted for use in efficiently and cost-effectively supplying business cards, stationery products and the like to institutional and conglomerate users.

### BACKGROUND OF THE INVENTION:

Charges for business cards, stationery products and the like constitute a significant portion of any commercial enterprise's cost of doing business. Due, in general, to the labor intensive nature of type-setting and, in particular, to the necessity to specifically tailor each product to a particular user's identity and/or office location, the actual printing costs associated with these items have traditionally far exceeded the costs associated with other print media. In addition, while smaller entities are more readily able to incorporate card and stationery ordering functions into other job functions, large institutional and conglomerate users often find that a significant number of personnel must be dedicated solely to the functions of order preparation, approval, submission, proofing, receiving, quality assurance and distribution. To further exacerbate the problem, each of these functions tends to be labor-intensive, each giving rise to the possibility for error, the only recourse being to reinitiate the entire process. Although such institutional and conglomerate users as are most affected by these problems have traditionally been expedient in rooting out similar problems in other areas of their businesses, they without exception tolerate these issues due to the generally accepted perception that no better system exists.

From the printer's perspective, the processes involved in receiving an order, typesetting a business card or stationery product and corresponding with the client to proof the order are typically more involved, and consequently often more costly, than the actual printing of the order. To further the frustration felt by the printer, the proofing process is ripe for dispute with the client, leading too often to the difficult decision as to whether to reprint an order free of charge or risk loss of the client by billing on a disputed order. What is more, even if the printer decides to discuss such an issue with its client, the regional printer must then at minimum absorb the long distance telephone charges involved in addition to those telecommunication charges already necessitated in faxing proofs and other related order documentation. Like the institutional and conglomerate users they serve, however, printers have consistently failed to address these issues, without exception accepting the present system as simply the best available.

Clearly, there is long-standing need for an improved print order system that eliminates these widely varied but unnecessarily cost-increasing functions. As a result, it is a primary object of the present invention to introduce an entirely new concept in business card and stationery ordering and printing for use by large institutional and conglomerate clients as well as the printers that serve their respective needs. In implementation of this concept, it is a further object of the present invention to provide an internet based print order system that minimizes data entry at the user site, streamlines the order approval process, eliminates the necessity for individual order proofing and eliminates data entry at the printer location. It is a still further object of the present invention to provide such a system that makes order status information automatically available for the user and incorporates the printer's billing functions directly into the order process. Likewise, it is a still further object of the present invention to facilitate drop-shipment of finished products by eliminating the need for user-side quality assurance and enabling orders to be processed according to destination address. Finally, it is an overriding object of the present invention to increase customer satisfaction by providing consistently accurate, fully company

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tailored business card and stationery products on a greatly reduced order processing timeline without sacrifice of control by the purchasing agent or of quality in the finished product.

#### SUMMARY OF THE INVENTION:

5        In accordance with the foregoing objects, the present invention – an automated print order system for institutional business cards and stationery products – generally comprises a requestor interface for entry of a distributed user's print order and a processor interface for fulfillment of the user's print order. In the preferred embodiment of the present invention, the requestor interface is adapted to enable the user to select a company tailored product according  
10      to a predeterminable profile and the processor interface is adapted to directly generate a pre-press product automatically incorporating the predeterminable profile into the tailored product. Although, in light of the exemplary embodiment set forth herein, those of ordinary skill in the art will recognize many substantial equivalents, the pre-press product of the preferred embodiment of the present invention comprises a direct-to-plate command set or a printing plate generated therefrom. As one alternative, however, it is noted that many objects of the present invention may be equally appreciated in an implementation wherein the pre-press product comprises a high-speed copier command set or the like.

15      Also in accordance with the preferred embodiment of the present invention, the predeterminable profile comprises user-indicative information, such as name and address, appropriate telephone and facsimile numbers, e-mail and/or web page information as well as  
20      billing codes and contact information for processing of the print order. As will be apparent further herein, however, it may also be advantageous to implement a plurality of predeterminable profiles, wherein one or more may also be dedicated to storage of similar company-indicative information. In any case, the requestor interface allows the user to selectively order a company

tailored business card or stationery product, which, as will be better understood further herein, will automatically incorporate the appropriate elements of the predeterminable profile or profiles.

The automated print order system of the preferred embodiment further comprises a purchaser interface for validating the user's print order. To effect this function, the purchaser interface is adapted to selectively authorize generation of the pre-press product and, to maximize purchasing agent control, enables the purchaser to modify the predeterminable profiles and/or 5 modify or delete the user's print order.

In the preferred embodiment of the present invention, the automated print order system resides on a server site with connectivity to the World Wide Web, which hosts the requestor 10 interface, the processor interface and the purchaser interface. In this manner, the requestor interface and the purchaser interface are accessible from any operable node on the World Wide Web. To maximize user-to-server communication efficiency as well as to provide for system security, the requestor interface further comprises a server-side scripting implementation.

Finally, the processor interface also comprises a batch function adapted to control pre- 15 press product generation. The automated print order system is adapted to store the user's order in an order data table having elements adapted to reference each predeterminable profile as required and the batch function is adapted to import information from these profiles into a batch table according to the references. As a result, a completed batch table comprises a complete 20 specification for the ordered tailored product, which may comprises any company authorized variation of letterhead, business cards, envelopes, writing pads, address cards, mailing labels or the like. Finally, the batch function is also adapted to format the batch table specification for the desired tailored product into a pre-press product compatible specification.

Finally, many other features, objects and advantages of the present invention will be 25 apparent to those of ordinary skill in the relevant arts, especially in light of the foregoing discussions and the following drawings, exemplary detailed description and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS:

Although the scope of the present invention is much broader than any particular embodiment, a detailed description of the preferred embodiment follows together with illustrative figures, wherein like reference numerals refer to like components, and wherein:

5       Figure 1 shows, in functional block diagram, the internet based print order system of the present invention as implemented according to the presently preferred embodiment;

Figure 2 shows, in flowchart, the top-level functions of the internet based print order system of Figure 1;

10      Figure 3 shows, in flowchart, certain details of the template and script generation function of Figure 2;

Figure 4 shows, in flowchart, certain details of the user interface propagation function of Figure 2;

15      Figure 5 shows, in schematic block diagram, certain details of the database structure of the internet based print order system of Figure 1 as referred to in Figure 4 and elsewhere;

Figure 6 shows, in flowchart, certain details, from an individual requestor's perspective, of the product request entry function of Figure 2;

Figure 7 shows, in a computer screen representation, certain details of the profile creation step of the product request entry function as detailed in Figure 6;

20      Figure 8 shows, in a computer screen representation, certain details of the order placement steps of the product request entry function as detailed in Figure 6;

Figure 9 shows, in a computer screen representation, certain details of the order review step of the product request entry function as detailed in Figure 6;

Figure 10 shows, in flowchart, certain details, from a local office representative requestor's perspective, of the product request entry function of Figure 2;

Figure 11 shows, in flowchart, certain details of the request approval function of Figure 2;

Figure 12 shows, in flowchart, certain details of the title or profile maintenance step of the request approval function as detailed in Figure 11;

5       Figure 13 shows, in a computer screen representation, certain details of the service center profile creation sub-step of the title or profile maintenance step as detailed in Figure 12;

Figure 14 shows, in flowchart, certain details of the order processing step of the request approval function as detailed in Figure 11;

10      Figure 15 shows, in a computer screen representation, certain details of the order approval sub-steps of the order processing step as detailed in Figure 14;

Figure 16 shows, in flowchart, certain details of the batch processing function of Figure 2;

Figure 17 shows, in flowchart, certain details of the order processing step of the batch processing function as detailed in Figure 16;

15      Figure 18 shows, in flowchart, certain details of the batch creation and implementation sub-step of the order processing step as detailed in Figure 17;

Figure 19 shows, in a computer screen representation, certain details of the batch implementation sub-step detailed in Figure 18; and

20      Figure 20 shows, in flowchart, certain details of the batch-to-script importation function of Figure 2.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT:

Although those of ordinary skill in the art will readily recognize many alternative embodiments, especially in light of the illustrations provided herein, this detailed description is

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exemplary of the preferred embodiment of the present invention, the scope of which is limited only by the claims appended hereto.

Referring now to Figure 1 in particular, the Internet based print order system 30 of the present invention is shown to generally comprise one or more requestor interfaces 31, 32, a purchaser interface 33 and a processor interface 34, each resident upon the World Wide Web 35 through a host server 36. As also shown in Figure 1, the print order system 30 of the present invention further comprises an interface 37 from the server 36 to an automated pre-press system 38 such as, for example, a direct-to-plate system. In operation, individual users and/or local office representatives access the server 36 through their respective ordinary Internet gateways 39, 40 in order to update user information and/or to place print orders. As will be better understood further herein, the updated information and/or print orders are then immediately accessible to a company purchasing representative, through the representative's ordinary Internet gateway 41, for order modification, deletion or approval. Likewise, approved print orders are then immediately accessible to the printer, through the printer's ordinary Internet gateway 42 or by direct access 43 to the server 36, as shown in Figure 1, for any necessary processing prior to pre-press. Finally, approved and processed orders are directly flowed to the pre-press system 38, wherein a fully tailored print plate, or the substantial equivalent, is automatically produced to predetermined customer specifications.

As particularly shown in Figure 2, the print order system 30 of the preferred embodiment of the present invention is generally implemented by generating per-product electronic publishing templates and a script program for automatically flowing order data thereto 44. As will be better understood further herein, the template and script program generation step 44 is also relied upon to generate a company specific field list, which is then used to construct a database management system 74, for collection and storage of user and print order information, and to propagate the requestor, purchaser and processor interfaces thereto 45. Because the print

order system 30 of the preferred embodiment of the present invention is designed for Internet implementation, the user interfaces are disseminated simply by e-mail message or like communication of the URL addresses corresponding to the interfaces' location on the World Wide Web 46.

Once the database management system and the requestor, purchaser and processor interfaces thereto are established on the host server, business card and stationery print orders may be repetitively fulfilled through an efficient process of simplified order entry 47 and approval 48 followed by batch processing 49 and scripting 50 for the automated and accurate generation of print plates 51. As will be better understood further herein, the order entry step 47 generally comprises the single entry of user specific information followed by the repeated mere selection, from a full range of available products, of desired print products. As will be appreciated by those of ordinary skill in the art, this architecture dramatically reduces errors in order fulfillment by virtually eliminating the typesetting function. As also detailed further herein, the order approval process 48 is greatly streamlined by enabling the company's purchasing agent to rely upon the unchanged status of previously checked user entered information as well as his or her confidence in the automated fulfillment of an approved order. Finally, no typesetting and no proofing is required of the printer as the approved order information is directly and automatically flowed into the pre-press product 51.

Referring now to Figure 3, the template and script program generation function 44 is detailed. As a preliminary step, a printer representative will typically conduct an in-depth interview with the company client to determine the company's full range of business card and stationery needs 52. This interview will also determine the circumstances dictating when the various options are to be made available to each level of personnel. Samples of presently utilized business card and stationery products may also be collected at this time in order to ensure maximum product continuity upon implementation of the system. The printer's electronic

publishing staff then generates a prototypical product record for each product to be made available through the system 53. This record, or template, comprises the complete typography of each product, including all tracking, kerning, text adjustment, graphics placement and like information. As will be better understood further herein, the prototypical records should be  
5 generated in a software directly compatible with the pre-press product to be used in fulfillment of the customer's print orders – in the preferred embodiment, a direct-to-plate platemaking system such as the well-known DPX system commercially available from Purup-Eskofot of Denmark. Although those of ordinary skill in the art will recognize many substantial equivalents, especially in light of this exemplary description, Applicant has found that the trademark "QUARK  
10 XPRESS" electronic publishing application, commercially available from Quark, Inc. of Denver, Colorado, is one such suitable software.

As each possible product configuration is captured in a prototypical product record, a script program and field list is generated 54 as what will become an automated interface with a database management system 74, detailed further herein. This list essentially defines the fields for the database tables, each field representing a unique element of the various products' specification. For example, and in every case depending upon product layouts, one or more fields may be dedicated for the individual user's name, a field may be dedicated for the user's direct telephone line, a field may be dedicated for the user's e-mail address and so forth. As will be better understood further herein, user peculiar information of this nature is referred to as user-  
15 indicative information and the fields that contain such information will be utilized to create one or more predeterminable profiles in the database creation steps, detailed further herein. Likewise, one or more fields may be dedicated for company-indicative information such as, for example, the address of a particular local office or the list of authorized, standard titles for various  
20 personnel.

Although those of ordinary skill in the art will recognize that the data from a database created according to these fields could be flowed directly to the electronic publishing application for merger with the prototypical product records, it is preferred that a script program be generated 54 to handle formatting and graphics importation as an intermediate, albeit fully automated, process. The provision of such a script program ensures that the business cards and/or stationery products will invariably be produced according to company specification regardless of font type or size, and the like, utilized in filling the database tables. In the preferred embodiment of the present invention, Applicant has implemented such a script program with the trademark "XDATA" extension to the Quark product, commercially available from Em Software, Inc. of Steubenville, Ohio. Although those of ordinary skill in the art will recognize many substantial equivalents, the "XDATA" product is widely compatible with many standard database and spreadsheet applications and is specifically adapted for compatibility with the implemented trademark "QUARK XPRESS" application.

Once a template has been produced for each product to be made available through the system and the fields necessary for completion thereof have been identified, demonstrative data may be flowed to the electronic publishing package to actually generate a print plate for quality assurance purposes 55. As will be better understood further herein, this is the only instance of proofing required according to the method of the present invention. If the product is correct at this juncture, the product will be correct in all cases save an error in filling the database. As also be better understood further herein, however, the print order system of the present invention is also specifically adapted to root out any such database error. Assuming then client acceptance of the products produced according to the generated templates and scripting program, the field list is exported for database implementation 56, as detailed in Figure 4.

As an initial step, the fields are parsed according to the type of information to be collected and held therein and, as will be better understood further herein, the circumstances

under which that type of information may change over the implementation life of the print order system 57. Each category is then implemented in the database 74 as a separate, cross-linkable table 58. For example, as shown in the exemplary representation of Figure 5, the “orders” table 59 may only contain an order number 60, product identifier 61, quantity 62 and user identifier 63. While the product identifier 61 and quantity information 62 are directly stored in the “orders” table 59, it is noted that the user information is actually only a cross-link to the “users” table 64. In this manner, as will be better understood further herein, an update to a user’s information may be effective at the last possible moment prior to actual product printing. Likewise, company-indicative information is cross-linked from the “company” table 65 to ensure that a single update can be made effective on a date certain within all outstanding orders. As also shown in Figure 5, product identifiers 61, stored in the “products” table 66 and authorized titles 67, stored in the “titles” table 68, are flowed into the various other tables as selectable only inputs. In this manner, only those products for which a prototypical record have been developed and only those titles authorized by the company can be selected by a user requestor.

Once the database tables are defined 58, according to the foregoing considerations, HTML interfaces are generated for database manipulation and maintenance 69. The system is then activated on the host server 70. In the preferred embodiment of the present invention, the HTML interfaces are implemented using a server-side scripting language, such as the trademark “ACTIVE SERVER PAGES,” commercially available from the Microsoft Corporation of Redmond, Washington. In this manner, communications with the server from a user’s browser are made extremely efficient, ultimately resulting in increased customer satisfaction. As is well-known to those of ordinary skill in the art, such an implementation also enables the provision of effective security protocols. In any case, as shown in Figures 6 through 19, the implemented database interfaces 31,32,33,34 of the present invention enable efficient order entry and approval

and streamlined order fulfillment and exemplary features of the preferred embodiment are now detailed.

*Part A*) Referring now to Figure 6, the many of the functions available to the individual user print product requestor are detailed. As shown in the Figure, a security protocol is implemented  
5 71 to identify the individual user and, if the user has not previously utilized the system 72, he or she will be invited to create an individual profile 73. This profile, which will store all user-indicative information necessary to produce any available business card or stationery product, is then stored on the server 36 in the database management system 74. As shown in Figure 7, such a profile 73 may include personal information such as the individual's name 75 and telephone number 76, and may also include, at the company's discretion, such information as a billing code 10 77 and/or supervisor name 78. It is noted that information such as the user's title 79 and address 15 80 are selected from drop-down menus 81, 82, thereby ensuring company control of authorized titles and address format, as will be better understood further herein. Finally, upon saving of the profile 73, a "last updated" date 83 is noted for communication to the company purchasing agent. In this manner, the company purchasing agent need only verify user input data upon change of that data.

Referring again to Figure 6, it is noted that the individual user then has the options to place a new order 84, review the status of a pending order 85 or to update his or her profile 86, as necessary. As also shown in the exemplary order screen of Figure 8, the user places a new order 20 by simply entering the desired quantity per product 87 on the order form and then selecting the style 88 and shipping method 89. In this manner, the likelihood for error in the ordering process is virtually eliminated. The submit order button 90 is then simply clicked, reducing the entire business card and stationery product order process to an easy, error-free few seconds. The user may then be automatically logged out of the requestor interface 91.

In the alternative, the user having already placed an order may desire to know the status of that order. In this case, the user is directed to an order status screen 85, such as the exemplary screen represented in Figure 9, where the precise status of the order is made available without necessity for any human resources. As shown in the representation, the user can tell whether the company purchasing agent has approved the order 92 as well as whether the agent has changed any portion, such as quantity 87 or shipping method 89, of the order. Likewise, if there is any delay in the order fulfillment process, the user will also have accurate information as to whether the delay is a printer problem or a delay in the approval process.

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As shown in Figure 10, the local office or service center representative is provided with similar functionality for ordering general stationery or business card products. Although the order placement process 93 and status review functions 94 are virtually identical to those made available to the individual user and the representative may view the local office profile 95, it is noted that the local office level representative does not have the ability to modify the office profile. In this manner, print orders are not disrupted by miscommunication and/or disagreement among remote personnel.

Turning now to Figure 11, the company purchasing agent is provided with a purchaser interface 33 through which he or she is able to maintain the local office profiles and/or the list of authorized personnel titles 96. The purchasing agent is also provided with functionality enabling the expedited modification, deletion and/or approval of individual and service center orders 97 and can at any time view a report indicating the status of all orders in the system 98, from entry through shipment and billing.

As shown in Figure 12, the company purchasing agent is the preferred level of control over the authorized titles list and the content of the service center profiles. The purchasing agent can add, edit or remove titles 99 and can create 100, modify 101 or remove 102 center profiles. Referring back to Figure 5, however, it is noted that the database 74 is specifically set up to

prevent such changes from having an adverse affect on pending orders. For example, it is noted that when a user selects a title 67 from the list of authorized titles, represented in the "titles" table 68, the actual title 67 is imported to the "users" table 64. In this manner, a single keystroke is prevented from upsetting the entire order process. On the other hand, some of the company data, but not necessarily all of the company data, is incorporated into the "users" table 64 by reference only. For example, the service center address 103 may find its way into an order through a reference only in the "users" table 64 indicating the location of the user. In this manner, a center relocation will be reflected upon every affected order not actually printed. Finally, in the event of a center closure during the pending of an order, the order will be rightly cancelled and the user individual user will preferably be required to select a new location upon next logon. As shown, in Figure 13, the service center profile 104 includes much the same types of information as does an individual's profile, including address lines 105, billing codes 106 and/or logo designs 107.

Turning to Figure 14, the order processing function 97 as made available to the purchasing agent is detailed. As shown, the streamlined process entails reviewing the orders 108 and then simply clicking a check box 109, shown in Figure 15, to approve the orders 110. As previously mentioned, however, the purchasing agent does have information available indicating when the user last changed his or her profile 83 as well as cost information 111. This information may be used to invoke a decision to view the user's profile 112 for error prevention and/or to modify 113 or remove 114 an order or portion thereof. Once the purchasing agent has effect all necessary changes, however, and selected those orders for approval, a simple click of the "approve order" button 115 sets the actual printing process into motion. In the alternative, the preferred embodiment also comprises a function for the individual approval of a "rush" order without necessity for setting the entire process in motion 116.

*Draft* Upon approval of one or more orders, the processor is provided with the ability to process the orders 117, as detailed in Figure 16. As also detailed in Figure 16, the processor also always has the ability to maintain client data 118, such as price lists, and to maintain system functions 119, such as the field lists. As shown in Figure 17, order processing generally 5 comprises the functions of batch processing 120, shipping 121 and billing 122. The processor is, of course, also given the ability to view the status of as of yet not approved orders 123, which is extremely useful for order raw materials according to statistical analysis indicating the number of orders that will materialize in the near future.

*Draft* Batch processing 120, detailed in Figures 18 and 19, allows the processor to sort the 10 orders into batches, each of which may be assigned a unique identifier for "work order" purposes 123, and to assign the sorted orders into the appropriate batches 124, the assignment being recorded in a "batch element" table 125 as shown in Figure 5. The assignment to batches will generally be based upon product style, paper stock requirements and ink color requirements, but also may consider such factors as shipping address. Although this process is presently a manual 15 function, it is anticipated that the entire batching process could be implemented according to a rule-based system. This system would also ensure maximized profit without sacrifice to customer satisfaction by capping the length of time an order may be approved prior to printing while generally attempting to avoid unnecessary print runs. Finally, it is noted that the processor 20 preferably has access to the user profiles 126 as well as the orders themselves 127 during a manual batching, 128 or an intervention to an automated batching, in order that any necessary correction can be made at any time prior to actual printing.

Finally, as shown in Figure 20, all information necessary for completing an order is 25 flowed into a "batch" table 129 according to the order numbers identified in the "batch element" table 125 at a time just prior to order fulfillment. The data in the "batch" table 129 is then formatted for file transfer 130 and downloaded 131 for importing to the script program 132. In

this manner, each predeterminable profile is automatically incorporated into the pre-press product with no typesetting or other human intervention. The pre-press product, which may be a direct-to-plate command set, high-speed copier command set or the like, is then taken to press.

In the system of the present invention, the time for order fulfillment is reduced from several days per plate to three to four minutes. What is more, the errors traditionally associated with business card and stationery product orders are essentially eliminated. It is to be expected, therefore, that the invention of the present invention will find widespread application in the fulfillment of business card and stationery product orders for virtually every institutional and conglomerate user.

While the foregoing description is exemplary of the preferred embodiment of the present invention, those of ordinary skill in the relevant arts will recognize the many variations, alterations, modifications, substitutions and the like as are readily possible, especially in light of this description, the accompanying drawings and claims drawn thereto. For example, it is anticipated that the entire initial database creation process could be automated through the provision of a software application specifically designed for this purpose. Likewise, with the implementation of an additional function involving an implementation of the trademark "ADOBE PDF" standard, the user requestor and/or purchasing agent could be given the opportunity to preview the finished product at the time of order entry or approval or, with an implementation involving a Macromedia trademark "FLASH" standard, user instructions could be verbalized and/or animated. In any case, because the scope of the present invention is much broader than any particular embodiment, the foregoing detailed description should not be construed as a limitation of the scope of the present invention, which is limited only by the claims appended hereto.